

**REMARKS**

By this amendment, claim 1 has been amended. Support for the changes to claim 1 can be found, *inter alia*, in Figures 1-7 of the originally-filed application. Claims 4-13 and 15-21 stand withdrawn from consideration. Claims 1-3 and 14 are presented for further examination.

As an initial matter, Applicants note that the foreign language patent document JP 1-181513 that was submitted with the Information Disclosure Statement filed on September 14, 2004 (document number AK) has not yet been considered by the Examiner. At the time of filing the September 14, 2004 Information Disclosure Statement, it was believed that this document was to have been forwarded to the USPTO by the International Bureau. In order to aid the Examiner and expedite consideration of this foreign language patent document, a copy of the document including an English language abstract is attached herewith.

Applicants respectfully request that the Examiner return an initialed form PTO-1449 indicating that JP 1-181513 has been considered.

The objection to the specification as set forth on page 2 of the Office Action is believed overcome by the corrected paragraph submitted herewith. Reconsideration and withdrawal of the objection are respectfully requested.

The rejection of claims 1 and 14 under 35 U.S.C. § 102(b) over Collins, US 5,707,486; the rejection of claims 1-3 under 35 U.S.C. § 103(a) as obvious over Nobuyuki, JP 11-111494; and the non-statutory obviousness-type double patenting rejections of claim 1 over claim 1 of Ishii, US 6,657,151 in view of

Collins, and over claims 1, 4, 8, 11 and 15 of Sugiyama, US 5,314,603 in view of Collins, are respectfully traversed with respect to the amended claims.

The invention relates to a plasma processing apparatus that produces gas plasma in a vacuum chamber. The apparatus includes a balanced transmission line that is used to generate an electromagnetic field to form the plasma. The balanced transmission line is connected to a high-frequency power supply and has a terminal used to attain an impedance match. As amended, the balanced transmission line is required to include two parallel conductors that are arranged horizontally one above the other. Applicants respectfully submit that a plasma processing apparatus comprising a balanced transmission line having the foregoing structural configuration is neither disclosed nor suggested by the prior art of record.

Collins discloses a plasma reactor to which high frequency energy is applied by a split electrode structure 25 comprising a pair of band electrodes 26-26. In the apparatus of Collins, a high frequency energy source 27 is coupled to the split electrode 25 by a matching network 28 via a transmission line structure having twin leads 77-77 coupled to the band electrodes 26-26 (see, e.g., column 6, line 66 through column 7, line 18 and Figure 1).

Even if the twin leads 77-77 are viewed as being positioned one above the other, the twin leads 77-77 do not generate an electromagnetic field to produce plasma, as require by claim 1. Further, Applicants note that the band electrodes 26-26 of Collins are not arranged horizontally one above the other. Because Collins does not disclose or suggest the balanced transmission line as recited in

claim 1, reconsideration and withdrawal of the rejection based on Collins are respectfully requested.

As noted in the Office Action, Nobuyuki discloses a plasma processing unit comprising a coaxial track 4 and an antenna 5. Nobuyuki does not disclose or suggest, however, a balanced transmission line that is used to generate an electromagnetic field, where the balanced transmission line includes two parallel conductors that are arranged horizontally one above the other. Rather, the coaxial track 4 of Nobuyuki includes vertically disposed conductors. Reconsideration and withdrawal of the obviousness rejection based Nobuyuki on are respectfully requested.

Finally, Applicants submit that the obviousness-type double patenting rejections have been overcome by the current amendments to claim 1. As with Nobuyuki, Ishii merely discloses a main coaxial line comprising a pair of conductors that are disposed vertically. Ishii does not disclose, suggest or claim a balanced transmission line that includes two parallel conductors that are arranged horizontally one above the other. Moreover, the combination of Ishii with Collins, which was discussed above, also fails to render claim 1 obvious.

Sugiyama discloses a plasma etching apparatus having a process chamber containing upper and lower electrodes. Cable transmission lines are used to apply power to the electrodes. However, neither the electrodes nor the cable transmission lines of Sugiyama read on the balanced transmission line as recited in amended claim 1. As with Ishii, the disclosure of Collins, which was relied upon for teaching a balanced transmission line and the use of a terminal for

impedance matching, does not remedy the deficiencies of Sugiyama with respect to claim 1. Reconsideration and withdrawal of the rejections are respectfully requested.


In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt favorable action thereon is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #101249.55411US).

Respectfully submitted,

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